

IV

RELATIVITY¹

GENTLEMEN of the University, Graduates of Rice, and you, my neighbors and my friends, I think I may, without incurring even from the most censorious the charge of egotism, preface this address by saying that I think the authorities of this institution are to be particularly commended that in these times, when the new and the ephemeral are seeking to crowd from the stage the venerable and the enduring, they have testified to their adherence to the abiding things of life by choosing to deliver your baccalaureate addresses two men each of whom represents the most venerable, the most stable, the most enduring institution of its kind the world has ever seen: one the Holy Roman Catholic Church, which counts time in millenniums and which has stood and will still for centuries stand as the shadow of a great rock in a weary land; the other, the Judicial Power of the United States as embodied in its courts, in whose keeping for more than a century and a quarter the ark of the covenant of the Constitution has safely rested.

Everywhere in these first days of June young men and young women are pausing for their brief moment of triumph and congratulation before leaving forever the still precincts of the college close. On such occasions it has been the custom of the college authorities to set up one who, with great words and mellow speech, shall show forth to

¹ Address delivered by Joseph Chappell Hutcheson, Jr., Judge of the Federal Court, Houston, Texas, at the fifth commencement convocation of the Rice Institute, held Monday morning, June 7, 1920, at nine o'clock.

these new adventurers something of their road. That office having fallen to my lot, here I stand, confused between pride and humility; now proud, like knowledge, that I know so much; now, like wisdom, humble that I know no more. What shall I say to you, Graduates of Rice, as with hearts happy but subdued, with faces shining with anticipation yet wistful with regret, you look through the sweet portals of college life out to the winding road?

No one more than I acknowledges the charm and the glory of sheer youth. There is a passion of regretful sadness in Fitzgerald's lovely lines:

Yet ah, that Spring should vanish with the rose;
That Youth's sweetscented manuscript should close,

and I, who am at that age which some call the old age of youth, and yet other some the youth of old age, would not willingly take from youth's store of charms one single amulet, nor shorten by a grain its wonderful hour.

Were this the age of fable, how pleasant my rôle! With what delightful cadences would my voice fall on your listening ears while I, with beautiful words of cheer, told the Theseus tale that the devourers of men had all been slain, and the way made safe to Athens! But this is the age of Reason, and Reason, sprung from Truth, demands truth-telling of her votaries.

What shall I say to you then? Shall I, as some do, take this time to glorify your youth and pander to your pride in it? That I will not do, for though I do not believe that George Ade's commencement address is either fair or moral, I do believe that it would be more in keeping with the dignity and purpose of these occasions if the graduates were regarded by the speaker as normal persons of at least average intelligence, and not as so many little Jack Horners, each

proudly exhibiting his plum, and each as proudly proclaiming, "What a great boy am I!"

Having thus, I think, satisfactorily laid the predicate for an address which will not drip with the saccharine sweetness common to efforts of this kind, I will, with your kind indulgence, take my courage and my subject at once in hand and proceed to their demonstration, premising first, as to my courage, that I do not agree with Socrates, that courage springs alone from knowledge and preparation, and second, as to my subject, which, as you will see from the programmes in your hands, is "Relativity," that I am fully prepared to believe what Einstein has said of his theory, that only ten men in the world could understand his treatment of it, and more than prepared to admit that I certainly am not one of the ten.

It might be supposed that I, a lawyer by profession and a member by appointment of the judicial system of the United States, neither of which occupations equips me to discuss learnedly mathematical and physical laws, would in this presence enter with diffidence upon the discussion of the subject which I have chosen. You shall see, however, as the argument unfolds, that I am not in such bad case as would at first appear, for by the use of the "ambiguous middle" I shall craftily elude the argumentum ad hominem of "shoemaker, stick to your last," on which the mathematicians would spit me if I stayed too long in their field, and shall be found, for the most part of this address, blithely tilting at windmills far from their sight and ken; for, to speak plainly, while I do intend to refer briefly to that phase of Einstein's theory of Relativity which leads to the conclusion that "the mass of a body depends upon its velocity," I shall do so only as illustrative of the broader aspects of the term Relativity which are expressed in the philosophical doctrines

that "all human knowledge is only relatively true or certain, and that thinking derives its whole significance from the point of view from which it starts."

The progress of the world is the history of the conflict between two schools of thought and action, absolutism and relativity. It is the nature of mankind to claim authority, and of authority to clothe itself in the habiliments of the absolute. Since time began the world has progressed from one cycle to another only by the successful overthrow of the absolutists who barred the way. One by one sometimes, and sometimes in companies and by battalions, the hosts of error have been beaten and dispersed, and no sooner has a system of thought builded itself tabernacles upon the supposed absolutism of its premises, than truth has swept its pillars away, revealing the fallacies of its foundation.

Scholasticism, which with its "argumentum ad verecundiam" and its standing major premise "Stultum est dicere Aristotelem errare" ruled the Middle Ages, long ago got its "hic jacet," and it has for a long time been true that mathematics alone of all the sciences dared lay claim to absoluteness. At last this citadel of the absolute has fallen; at last we learn that those three dimensions, length, height, and breadth, by and with which the mathematicians have constructed our world for us, and after which they have written their "ne varietur," do not tell us the full tale of creation; do not answer all the questions which creation raises.

There is a fourth dimension which must be reckoned with, the time of the occurrence of every physical event, and it can no longer be truly said that an inch is an inch and an ell an ell at all times and places. The truth is, an inch is an inch when the measured things are at rest, but something entirely different when they are traveling through space at high velocities.

Let me draw to this statement the authority of those who claim to know by brief quotations. In the March issue of *Harper's Magazine*, in an article by Lotka on this new theory, I find the following:

A point in space requires for its definition three numbers, as height above the sea level, latitude, and longitude. A physical event requires for its complete location these three numbers and still another, a fourth, the time of its occurrence. Accordingly time figures in Minkowski's exposition of the Einstein theory as a fourth dimension on a similar footing as the accustomed three dimensions of space.

And in *Science*, Friday, March 12, 1920, I find in the presidential address of Professor Ames, delivered at the St. Louis meeting of the Physical Society, December 30, 1919, the following very significant language:

Einstein called attention in his paper to the lack of definiteness in the concepts of time and space, as ordinarily stated and used. He analyzed clearly the definitions and postulates which were necessary before one could speak with exactness of a length or of an interval of time. He disposed forever of the propriety of speaking of the "true" length of a rod, or of the "true" duration of time, showing, in fact, that the numerical values which we attach to lengths or intervals of time depend upon the definitions and postulates which we adopt. The words "absolute" space or time intervals are devoid of meaning.

Now I understand that, as affecting our daily life and the ordinary conduct of our affairs, the existence of the fourth dimension is negligible. I am even reliably informed that yardsticks and tape measures will not be discarded, and will still function in their normal and usual way. The fact remains, however, that from the pedestal of absolutism from which the mathematician has looked down upon an erring world, he must now descend, taking his place by the side of his co-laborers in other fields of knowledge. He must learn to be, like them, open-minded enough to adjust his views to the facts of earth, rather than the facts of earth

to his views, and courageous enough to strike out from new discoveries, to propound new and near-reliable categories. Above all, he must learn to be wise enough to accept, with a quiet spirit and contented mind, the chastening influence of the lesson that only God is absolute. He must not begrudge to those of us who, toiling and moiling, have digged in other fields of knowledge our natural satisfaction over his temporary fall.

But, lest too much elation be our lot, and we see too clearly a vision of the permanently crestfallen mathematician, I hasten to add that immediately this relativity, this fourth dimension theory, is established to the satisfaction of a sufficient body of learned gentlemen, it will assume for itself the vocabulary of the absolute, and the smug mathematician will again, no doubt, advise us that figures cannot lie.

Our triumph over the mathematician being temporarily complete, let us leave him, for I charge you that he is the Ephraim of the scriptural injunction, "Ephraim is joined to idols; let him alone," while we proceed to the argumentum ad rem and for a while consider the eternal conflict between the absolute and the relative. This conflict begins at the cradle and ends only at the grave. It ushered in recorded history and will mark its closing passages, and as the mighty figures and epochal events crowd the canvas, let us appraise correctly these two theories of life and thought, giving each its proper place and function.

If it were not for the fact that the relativist becomes the absolutist, and the absolutist the relativist, we should no doubt to-day be not far removed from the state of our barbarian ancestors. The absolutists are the drivers; they furnish the power, the energy of motion and action. The relativists are the governors, who correct excesses and tone

down super-zeal. The beaten absolutist of to-day is the relativist of to-morrow, and the successful relativist of to-morrow becomes an absolutist again. When this change from absolute to relative, and from relative to absolute again, can be traced to the influence of moral compulsion, when it springs only from a passion for right and justice, it proves in irrefutable fashion that man is made in the image of his Creator.

If, when we turn the pages of history, we see its events and characters in the light alone which their own times afford, we can get no complete picture; we can lay no claim to having really read history. If, on the other hand, history is to us a treasure-house in which the things that are found there are interesting not only, or even mainly, for their form or for their color, but in relation to the other things which lie around, above, and below them, then it will always be with a quickened pulse and a high heart that we enter that veritable wonderland, where men, women, and events step majestically and slow into their allotted places in Time's great procession.

If our vision is broad enough, our spirit catholic enough, and our affection for the good, the true, and the beautiful warm enough, we can hope in time to lift out of the settings in which we find them, for a clearer and more perfect view, those people and those occurrences which have excited our admiration, aroused our indignation, intrigued our fancy, or engaged our thought. Then we can determine at last not partially, but wholly, what their place was, not only in the events of which they were a part, but in the whole great pageant which we call history.

I have sometimes thought that it was a dreadful thing that the bodies of men should have been broken on the wheel, the minds of men destroyed by torture and imprison-

ment, and the hopes and aspirations of a heart-sick world for centuries delayed because the absolutists of history not only could not agree with, but despised and feared, the relativists. I have sometimes thought how fine a thing it would be if Omnipotence would blot out from the history of the world all its bloody pages of persecution, of bigotry, and of tyranny, leaving only its fair record of progress and improvement. And yet, if I had the option to "otherwise enregister or else obliterate," I would do neither. Who would sponge out from the canvas the glorious pictures of the Christian martyrs, that holy band at once absolutists and relativists; absolutists in their faith in and love for the living God, and relativists in their certain knowledge that Nero, the absolutist, had power indeed over the body, but no power to kill the soul? What would the story of Protestantism be without Martin Luther, whose figure, commanding and powerful, fills the foreground of the Diet of Worms, and whose voice comes ringing through the centuries, "Here I stand; I cannot do otherwise, so help me God!" Would any picture of that movement be complete which left out Savonarola of Florence, Huss of Prague, John Calvin of Geneva, John Knox of Scotland, Wycliffe and Wesley of England, those great Protestants who held to the relativistic philosophy that only God is ultimate, and God alone is absolute; that it is not given to mortal men to set bounds or limitations to Truth, or so to crystallize it into any form of words or set of dogmas as that the form takes the place of the substance? No picture of these men and their times could be truly drawn which did not have for its background the intolerance, the persecution, and the bigotry of the established Church, with its great ecclesiastical figures who believed themselves entrenched in the very sacrosanct place of God's own authority.

But we need not confine ourselves for illustration to the figures of the Reformation. The eternal conflict between those who hold to the illimitable quality of truth, and those who declare that truth may be defined by and fixed in forms of words, really determines the march of events, and it would be, not history, but fiction if the story were allowed to unfold without the clash and the agony of the conflict.

Nor is this the history of the progress of men and of events alone. It is equally the history of the sciences, of education, of knowledge itself. It seems incredible to us that only a few years ago a tremendous controversy should have raged between the Church and the teachers of natural science, yet such is the fact. The great Huxley in his time broke many a lance with ecclesiastics in contests of no mean nature, and it was only after a prolonged and bitter struggle that those churchmen, who believed themselves the guardians of revealed truth, with the right to stand with flaming sword barring the way to inquiry and investigation, were put to flight and ceased to contest the way.

Always the history of states and the history of education show that the relativists have begun revolutions against fixed states of thought and fixed concepts of doctrine, with a noble consciousness of the wrongs which lay in the absolutists' point of view; but the same history shows that, overcome by the passion for power and the devotion to an idea which characterizes the zealot, it has often happened that men who in the name of liberty have overthrown its foes have instituted worse tyrannies than the ones they overthrew, and history still repeats itself.

No period of history better illustrates the point of this argument than that which is now unfolding before us. Called to arms by the rude challenge of absolutism gone mad, the whole body of relativists the world over rallied to

the battle-cry that the world must be made safe for democracy. That peril put down, a kind of madness has come over large sections of the people, and those who were relativists against the individual absolutist are become absolutists in favor of certain sections or blocs of the mass. You see it all around you that the world is momentarily mass-mad.

I know that it is not fashionable now to talk of the individual or of individualism. Great sounding phrases have swelled and puffed our speech until it is as inflated as our currency. The new freedom, internationalism, the brotherhood of man, the heart of the world, the dictatorship of the proletariat, direct government, the democratization of industry, collective bargaining, pass current on every tongue. We hear no longer the old, plain, individualistic words—industry, fidelity, honesty, purpose, friendship, courage, unselfishness, kindness, conscience; but we used to know and hear them, and I thank God it is as certain as that there is a God that they will be back in current speech again.

I know that some of these modern absolutists claim that the Kingdom of Heaven is at hand, and that these great words with which they conjure have power to dig and to delve, to shape and to fashion, to produce and to distribute, to feed and to clothe, the millions of our world. I know, too, that some of those absolutists claim that no longer shall it be said that he who will not work shall not eat, for that society must feed us all. I have not yet heard, however, how this same society will go about it, without brains to plan nor hands to fashion. Nor has it ever been recorded that mere words and phrases, however beautiful they sound in speech, can take the place of hard, patient industry and honest effort.

The relativists who launched the French Revolution

never could have conceived that they, as absolutists, would convert their day of liberty into a carnival of lust and murder. Having gone into it, a general view arose among them that there was in the words "Liberty, Fraternity, Equality" a very license for the libertine, and men soon lost their reason. Russia, with a terminology of its own, is staging another orgy of the same kind, and America may well look to her own house; for if there can be one truth stated by the human tongue with more conviction than another, it is that in no field of thought or of endeavor is it more important to strike down the absolutist, and preserve the relativist, than in the field of political experiment and governmental activity, and that if the tyranny of the monarch is base, the tyranny of the mob is baser.

What has all this to do with you, young men and young women, whose lives are hardly begun? Surely, you say, there are armies already gathered together to fight these Philistines. True, but who knows when a David shall come from tending his flocks, a Gideon from his fields?

Nearly one hundred years ago, in his first message to the Third Congress of the Republic of Texas, President Mirabeau B. Lamar said: "Cultivated mind is the guardian genius of democracy, and while guided and controlled by virtue, is the noblest attribute of man; it is the only dictator that free men acknowledge, and the only security that free men desire," and I say to you no mere man ever said a finer or a truer thing. For the purpose of education is discipline, the purpose of discipline is education, and the fine product of the two is the cultivated mind; he who in these times possesses that fine temper of the mind, wrought in the fierce fires of laborious study and self-discipline, which enables him to pass through life proving all things, holding fast to that which is good, preferring hard liberty to the easy yoke

of servitude, knowing his rights, and, knowing, daring to maintain them, tolerant of everything except intolerance and tyranny, deserves and will receive the support and gratitude of mankind.

And so I ask you to be relativists; clear-eyed, firm-souled men, despising, but fearing not, that makeshift for truth, the loud voice and show of authority. Be open-minded to truth's advances; fear only God and your conscience.

If you have been fortunate enough to sit under men in your classrooms and laboratories who love truth more than authority, who have taught you that, with all the advantages which study and information have opened to them and to you, there is little which can be stated in terms of the absolute, and even that little must, if truth be truth, be hedged about with qualifications, you can have no conception of the bigotry and intolerance which obsess so much of the world.

The world is full of men, and not by any means men alone in public office, who, like Rehoboam, love authority for its own sake, and who would like to say as he did, "My little finger shall be thicker than my father's loin. My father hath chastized you with whips; I will chastize you with scorpions." I do not think there is on God's footstool a more contemptible creature than the man who loves authority for its own sake; the man of the mailed hand and the voice of brass, who struts across his little stage in the pride of privilege or office, of position or of place.

To the cultivated mind authority over one's fellow-men is a vast responsibility and a great burden, and if it were possible to fill all places of authority with men of a cultivated mind, cruelty, that vile offspring of the base union of authority with tyranny, would vanish from the earth.

Let us then be relativists, loving the pursuit of illimitable

truth, and doing battle at all points with those who, with fixed formulæ and a show of authority, would attempt to bar the way. But, you say, are we to be lukewarm? Are we to be milk-and-water men and women? Are we to have no convictions? Are we to strike no lances for the right? Can progress come without the devotion of the partizan? Let me, in conclusion, answer all of your questions, "No." I ask you to join the relativists, and to live and work with them, only until some divine flame of inspiration lifts your eyes to the stars, and, like Joan of Arc, you hear the voices. Then you may become a very absolutist; that kind of absolutism, of devotion and service, of self-sacrifice, of the flagellation of the body and the spirit in the service of humanity, is forgiven in the sight of God and man. For that kind comes only when, in the inspired and immortal language of Woodrow Wilson,

Feelings sweep across our heartstrings like some air out of God's own presence, where justice and mercy are reconciled, and the judge and the brother are one.

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